SERVICE MANUAL & PARTS LIST (without price)

CFX-9970G (ZX-936A)

AUG. 1997

CFX-9970G

INDEX

CASIO®

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1. SPECIFICATIONS

Variables: 28

Calculation range:
$\pm 1 \times 10^{-99}$ to $\pm 9.999999999 \times 10^{99}$ and 0. Internal operations use 15-digit mantissa.
(except in ALGBR Mode)

Exponential display range: Norm1: $10^{-2} > [x], [x] \geqq 10^{10}$
(except in ALGBR Mode) Norm2: $10^{-9} > [x], [x] \geqq 10^{10}$

Program capacity: 60 kbytes (max.)

Power supply:

Main: Four AAA-size batteries (LR03(AM4) or R03 (UM-4))
Back-up: One CR2032 lithium battery

Power consumption: 0.2 W

Battery life*:

Main:
LR03(AM4): Approximately 230 hours (continuous display of main menu)
Approximately 2 years (power off)
R03(UM-4): Approximately 140 hours (continuous display of main menu)
Approximately 2 years (power off)
* The ALGBR Mode requires more electrical power than other modes, so extensive use of the ALGBR Mode shortens battery life.

Back-up: Approximately 2 years

Auto power off:

Power is automatically turned off approximately six minutes after last operation except when drawing dynamic graphs.
The calculator automatically turns off if it is left for about 60 minutes with a calculation stopped by an output command (◢), which is indicated by the “-Disp-” message on the display.

Ambient temperature range: 0 °C ~ 40 °C

Dimensions: 27.1 mm H × 85 mm W × 181.5 mm D (1 1/8" H × 3 3/8" W × 7 1/8" D)

Weight: 230 g (including batteries)
Current consumption:

	TYP [μA]	MAX [μA]
ON (MENU)	2961	3941
OFF	————	41.3

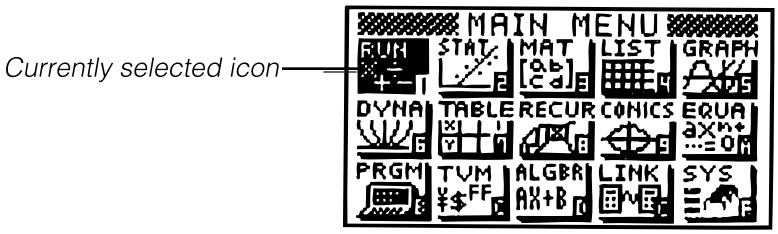
2. GENERAL GUIDE

2-1. Modes

• To select an icon

1. Press [MENU] to display the Main Menu.

[MENU]



2. Use the cursor keys (◀ , ▶ , ▲ , ▼) to move the highlighting to the icon you want.

3. Press [EXE] to display the initial screen of the mode whose icon you selected.
   - You can also enter a mode without highlighting an icon in the Main Menu by inputting the number or letter marked in the lower right corner of the icon.
   - Use only the procedures described above to enter a mode. If you use any other procedure, you may end up in a mode that is different than the one you thought you selected.

The following explains the meaning of each icon.

Icon	Mode Name	Description
	RUN	Use this mode for arithmetic calculations and function calculations, and for calculations involving binary, octal, decimal and hexadecimal values.
	STATistics	Use this mode to perform single-variable (standard deviation) and paired-variable (regression) statistical calculations, to perform tests, to analyze data and to draw statistical graphs.
	MATrix	Use this mode for storing and editing matrices.
	LIST	Use this mode for storing and editing numeric data.
	GRAPH	Use this mode to store graph functions and to draw graphs using the functions.
	DYNAmic graph	Use this mode to store graph functions and to draw multiple versions of a graph by changing the values assigned to the variables in a function.

Icon	Mode Name	Description
	TABLE	Use this mode to store functions, to generate a numeric table of different solutions as the values assigned to variables in a function change, and to draw graphs.
	RECURsion	Use this mode to store recursion formulas, to generate a numeric table of different solutions as the values assigned to variables in a function change, and to draw graphs.
	CONICS	Use this mode to draw graphs of implicit functions.
	EQUAtion	Use this mode to solve linear equations with two through six unknowns, quadratic equations, and cubic equations.
	PRoGraM	Use this mode to store programs in the program area and to run programs.
	Time Value of Money	Use this mode to perform financial calculations and to draw cash flow and other types of graphs.
	ALGeBRa	Use this mode to obtain mathematical expression results using natural mathematical display notation.
	LINK	Use this mode to transfer memory contents or back-up data to another unit.
	SYStem	Use this mode to check how much memory is used and remaining, to delete data from memory, and to initialize (reset) the calculator. It also lets you adjust display contrast.

2-2. Color Contrast Adjustment

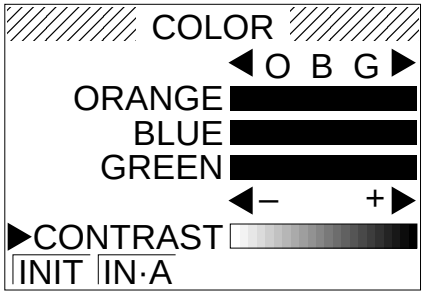
Adjust the color whenever objects on the display appear dim or difficult to see. There are two different settings you can make to get color the way you want it.

- Color contrast
- Tint adjustment for each color

• To display the color adjustment screen

1. Highlight the **SYS** icon in the Main Menu and then press EXE.
2. Highlight the **Color Contrast** and then press EXE .
   - **{INIT}/{IN•A}** ... {initialize highlighted color}/{initialize all colors}

Use the following procedures while the color adjustment screen is on the display to adjust the color contrast and tint settings.



• To adjust the color contrast

1. Use the cursor ▲ and ▼ keys to move the pointer so it is next to CONTRAST.
2. Press the ► cursor key to make the display darker and the ◄ cursor key to make it lighter. Holding down either key changes the setting at high speed.

• To adjust the color tint

1. Use the cursor ▲ and ▼ keys to move the pointer so it is next to the color (ORANGE, BLUE, GREEN) whose tint you want to adjust.
2. Press the ► cursor key to give the color greener tint and the ◄ cursor key to give it an orange tint. Holding down either key changes the setting at high speed.

• To exit the color adjustment screen

Press MENU to return to the Main Menu.

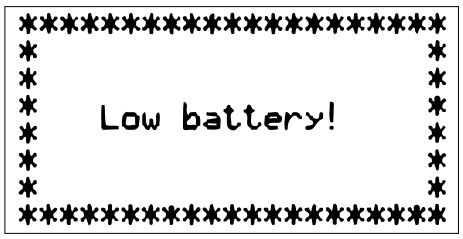
- It is recommended that you always adjust the CONTRAST setting first, and then adjust the tint settings for individual colors.

- You can change the CONTRAST setting at any time without displaying the color adjustment screen. Simply press SHIFT and then ◄ or ► to change the setting. Press SHIFT once again after get the display looking the way you want.

2-3. Power Supply

This unit is powered by four AAA-size (LR03(AM4) or R03(UM-4)) batteries. In addition, it uses a single CR2032 lithium battery as a back up power supply for the memory.

If the following message appears on the display, immediately stop using the calculator and replace batteries.



If you try to continue using the calculator, it will automatically turn power off, in order to protect memory contents. You will not be able to turn power back on until you replace batteries.

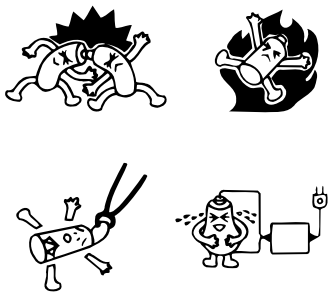
Be sure to replace the main batteries at least once every two years, no matter how much you use the calculator during that time.

Warning!
If you remove both the main power supply and the memory back up batteries at the same time, all memory contents will be erased. If you do remove both batteries, correctly reload them and then perform the reset operation.

Replacing Batteries

Precautions:
Incorrectly using batteries can cause them to burst or leak, possibly damaging the interior of the unit. Note the following precautions:

- Be sure that the positive (+) and negative (-) poles of each battery are facing in the proper directions.
- Never mix batteries of different types.
- Never mix old batteries and new ones.
- Never leave dead batteries in the battery compartment.
- Remove the batteries if you do not plan to use the unit for long periods.
- Never try to recharge the batteries supplied with the unit.
- Do not expose batteries to direct heat, let them become shorted, or try to take them apart.
  (Should a battery leak, clean out the battery compartment of the unit immediately, taking care to avoid letting the battery fluid come into direct contact with your skin.)



Keep batteries out of the reach of small children. If swallowed, consult with a physician immediately.

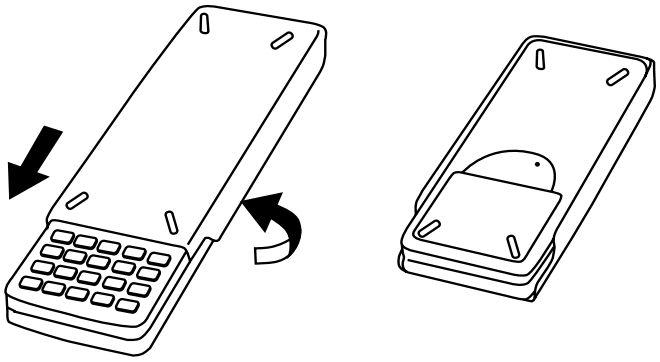
• To replace the main power supply batteries

* Never remove the main power supply and the memory back up batteries from the unit at the same time.
* Never turn the calculator on while the main power supply batteries are removed from the calculator or not loaded correctly. Doing so can cause memory data to be deleted and malfunction of the calculator. If mishandling of batteries causes such problems, correctly load batteries and then perform the RESET operation to resume normal operation.
* Be sure to replace all four batteries with new ones.

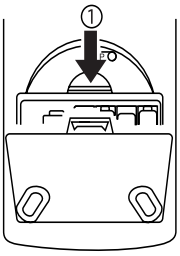
1. Press [SHIFT] [OFF] to turn the calculator off.

   Warning!
   * Be sure to turn the unit off before replacing batteries. Replacing batteries with power on will cause data in memory to be deleted.

2. Making sure that you do not accidently press the [AC/ON] key, slide the case onto the calculator and then turn the calculator over.



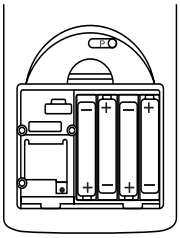
3. Slide the back cover from the unit by pulling with your finger at the point marked ①.



4. Remove the four old batteries.

5. Load a new set of four batteries, making sure that their positive (+) and negative (-) ends are facing in the proper directions.

6. Replace the back cover.



7. Turn the calculator front side up and slide off its case. Next press [AC/ON] to turn on power.

- Power supplied by memory back up battery while the main power supply batteries are removed for replacement retains memory contents.
- Do not leave the unit without main power supply batteries loaded for long periods. Doing so can cause deletion of data stored in memory.
- If the figures on the display appear too light and hard to see after you turn on power, adjust the tint.

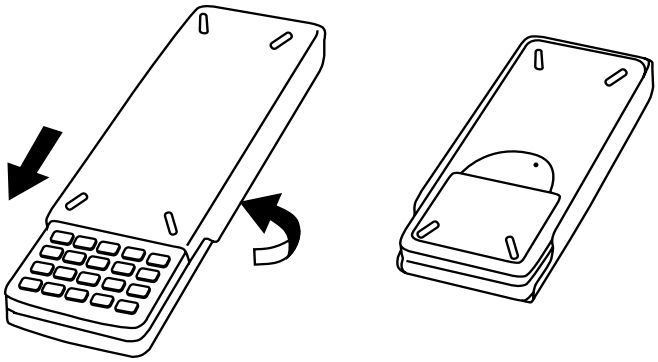
• To replace the memory back up battery

* Before replacing the memory back up battery, turn on the unit and check to see if the “Low battery!” message appears on the display. If it does, replace the main power supply batteries before replacing the back up power supply battery.
* Never remove the main power supply and the memory back up batteries from the unit at the same time.
* Be sure to replace the back up power supply battery at least once 2 years, regardless of how much you use the unit during that time. Failure to do so can cause data in memory to be deleted.

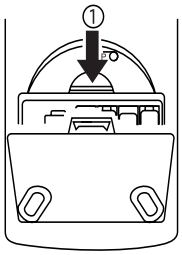
1. Press [SHIFT] [OFF] to turn the calculator off.

   Warning!
   * Be sure to turn the unit off before replacing batteries. Replacing batteries with power on will cause data in memory to be deleted.

2. Making sure that you do not accidently press the [AC/ON] key, slide the case onto the calculator and then turn the calculator over.

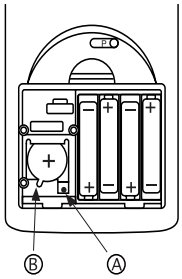


3. Slide the back cover from the unit by pulling with your finger at the point marked ①.

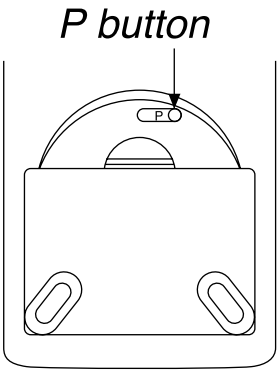


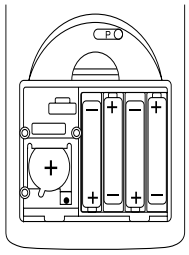
4. Remove screw Ⓐ on the back of the calculator, and remove the back up battery compartment cover.

5. Insert a thin, pointed non-metal object (such as a tooth pick) into the hole marked Ⓑ and remove the old battery.



6. Wipe off the surfaces of a new battery with a soft, dry cloth. Load it into the calculator so that its positive (+) side is facing up.



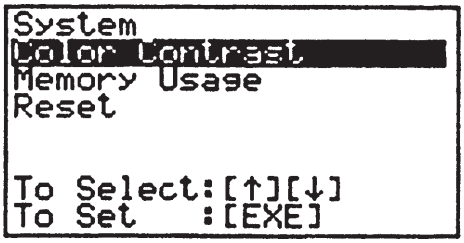


3. RESET OPERATION

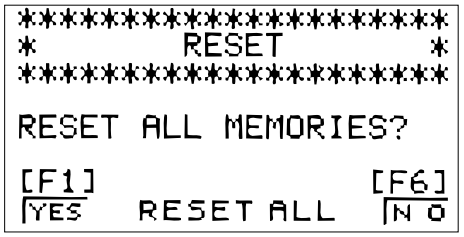
Warning!
The procedure described here clears all memory contents. Never perform this operation unless you want to totally clear the memory of the calculator. If you need the data currently stored in memory, be sure to write it down somewhere before performing the RESET operation.

• To reset the calculator

1. Highlight the **SYS** icon on the main menu and then press [EXE], or press [F] [tan].

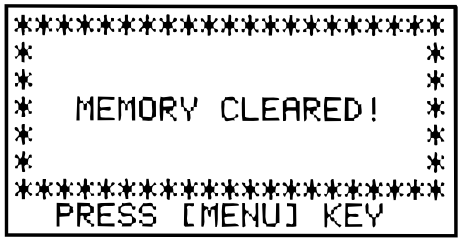


2. Use [▼] to move the highlighting down to "RESET" and then press [EXE].



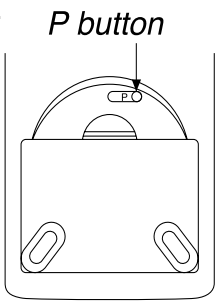
[F1] [F6]

3. Press [F1] (YES) to reset the calculator or [F6] (NO) to abort the operation without resetting anything.



4. Press [MENU].

- If the display appears too dark or dim after you reset the calculator, adjust the tint.
- If the calculator stops operating correctly for some reason, use a thin, pointed object to press the P button on the back of the calculator. This should make the RESET screen appear on the display. Perform the procedure to complete the RESET operation.
- Pressing the P button while an internal calculation is being performed will cause all data in memory to be deleted.



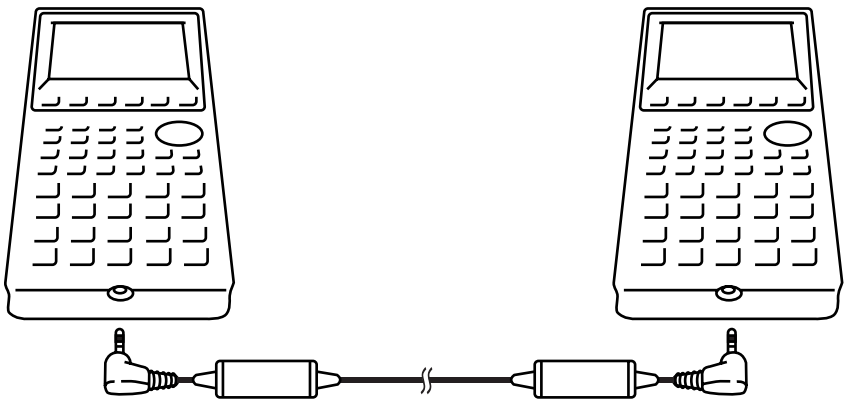
4. DATA COMMUNICATIONS

4-1. Connecting Two Units

The following procedure describes how to connect two units with an optional SB-62 connecting cable for transfer of programs between them.

To connect two units

1. Check to make sure that the power of both units is off.
2. Remove the covers from the connectors of the two units.
   - Be sure you keep the connector covers in a safe place so you can replace them after you finish your data communications.
3. Connect the two units using the SB-62 cable.



SB-62 cable

- Keep the connectors covered when you are not using them.

4-2. Before Starting Data Communications

In the Main Menu, select the **LINK** icon and enter the LINK Mode. The following data communication main menu appears on the display. (Select the **LINK** icon, then press **EXE** button.)

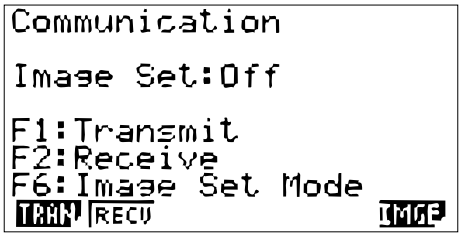


Image Set: ..... Indicates the status of the graphic image send features.

Off:	Graphic images not sent.
Monochrome:	Pressing F↔D sends graphic images in monochrome.
Color:	Pressing F↔D sends graphic images in color.

- {**TRAN**}/{**RECV**} ..... Menu of {send settings}/{receive settings}
- {**IMGE**} ..... {menu of graphic image transfer settings}

Communications parameters are fixed at the following settings.

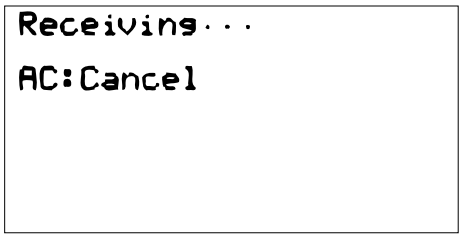
- Speed (BPS): 9600 bits per second
- Parity (PARITY): NONE

4-3. Performing Data Transfer Operation

Connect the two units and then perform the following procedures.

Receiving unit

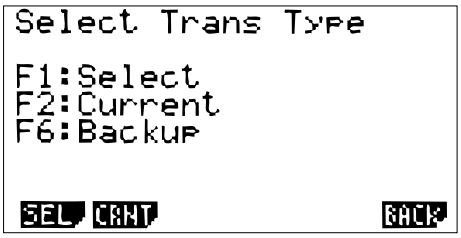
To set up the calculator to receive data, press [F2] (RECV) while the data communication Main Menu is displayed.



The calculator enters a data receive standby mode and waits for data to arrive. Actual data receive starts as soon as data is sent from the sending unit.

Sending unit

To set up the calculator to send data, press [F1] (TRAN) while the data communication Main Menu is displayed.

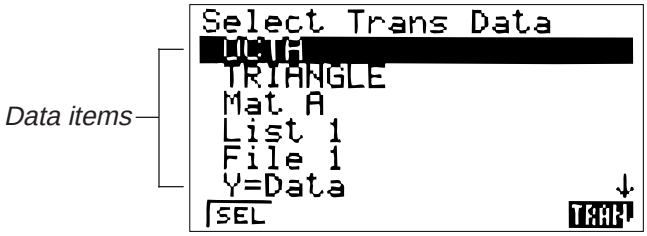


Press the function key that corresponds to the type of data you want to send.

- {**SEL**} .....{selects data items and sends them}
- {**CRNT**} ....{selects data items from among previously selected data items and sends them}
- {**BACK**} ...{all memory contents, including mode settings}

• To send selected data items

Press [F1] (SEL) or [F2] (CRNT) to display a data item selection screen.



- {SEL} .....{selects data item where cursor is located}
- {TRAN} ....{sends selected data items}

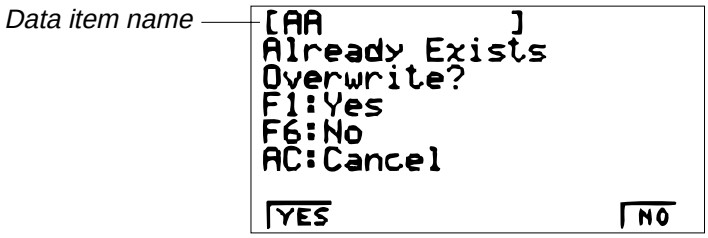
Use the ▲ and ▼ cursor keys to move the cursor to the data item you want to select and press [F1] (SEL) to select it. Currently selected data items are marked with "▶". Pressing [F6] (TRAN) sends all the selected data items.

• To deselect a data item, move the cursor to it and press [F1] (SEL) again.

Only items that contain data appear on the data item selection screen. If there are too many data items to fit on a single screen, the list scrolls when you move the cursor to the bottom line of the items on the screen. The following are the types of data items that can be sent.

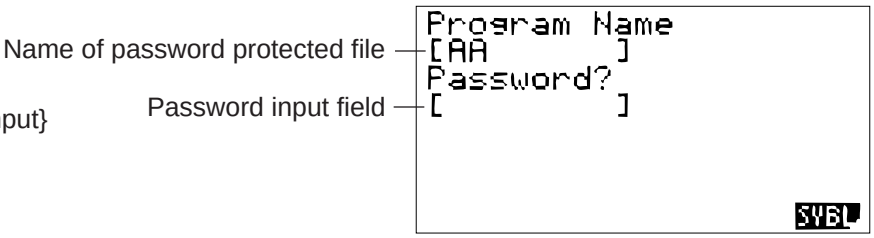
Data Item	Contents	Overwrite Check*1	Password Check*2
Program	Program contents	Yes	Yes
Mat *n*	Matrix memory (A to Z) contents	Yes	
List *n*	List memory (1 to 6) contents	Yes	
File *n*	List file memory (1 to 6) contents	Yes	
Y=Data	Graph expressions, graph write/non-write status, View Window contents, zoom factors	No	
G-Mem *n*	Graph memory (1 to 6) contents	Yes	
V-Win *n*	View Window memory contents	No	
Picture *n*	Picture (graph) memory (1 to 6) data	No	
DynaMem	Dynamic Graph functions	Yes	
Equation	Equation calculation coefficient values	No	
Variable	Variable assignments	No	
F-Mem	Function memory (1 to 6) contents	No	

*1 No overwrite check: If the receiving unit already contains the same type of data, the existing data is overwritten with the new data.
With overwrite check If the receiving unit already contains the same type of data, a message appears to ask if the existing data should be overwritten with the new data.



- {YES} .....{replaces the receiving unit's existing data with the new data}
- {NO} .....{skips to next data item}

*2 With password check: If a file is password protected, a message appears asking for input of the password.

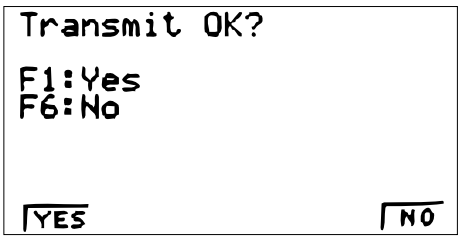


- {SYBL} ....{symbol input}

After inputting the password, press EXE.

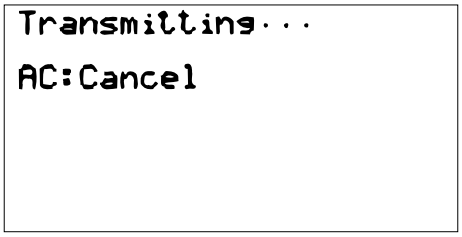
• To execute a send operation

After selecting the data items to send, press [F6] (TRAN). A message appears to confirm that you want to execute the send operation.



- {YES}.....{sends data}
- {NO}.....{returns to data selection screen}

Press [F1] (YES) to send the data.

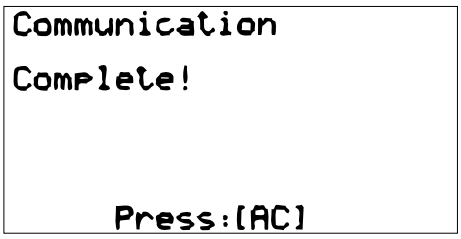


- You can interrupt a data operation at any time by pressing [AC] .

The following shows what the displays of the sending and receiving units look like after the data communication operation is complete.

Sending Unit

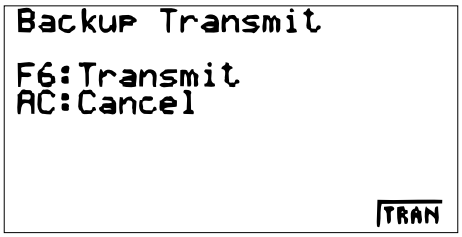
Receiving Unit



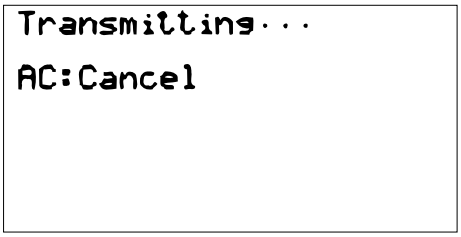
Press [AC] to return to the data communication Main Menu.

• To send backup data

This operation allows you to send all memory contents, including mode settings. While the send data type selection menu is on the screen, press [F6] (BACK), and the back up send menu shown below appears.

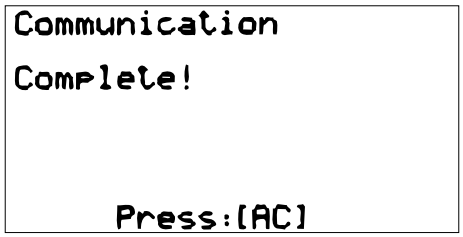


Press [F6] (TRAN) to start the send operation.

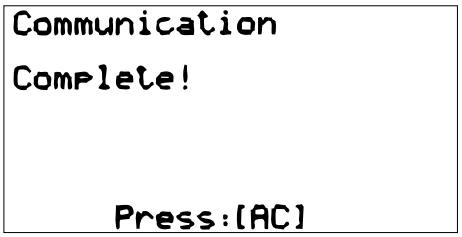


The following shows what the displays of the sending and receiving units look like after the data communication operation is complete.

Sending Unit



Receiving Unit



Press [AC] to return to the data communication Main Menu.

- Data can become corrupted, necessitating a RESET of the receiving unit, should the connecting cable become disconnected during data transfer. Make sure that the cable is securely connected to both units before performing any data communication operation.

4-4. Data Communication Precautions

Note the following precautions whenever you perform data communications.

- An error occurs whenever you try to send data to a receiving unit that is not yet standing by to receive data. When this happens, press [AC] to clear the error and try again,after setting up the receiving unit to receive data.

- An error occurs whenever the receiving unit does not receive any data approximately six minutes after it is set up to receive data. When this happens, press [AC] to clear the error.

- An error occurs during data communications if the cable becomes disconnected, if the parameters of the two units do not match, or if any other communications problem occurs. When this happens, press [AC] to clear the error and correct the problem before trying data communications again. If data communications are interrupted by [AC] key operation or an error, any data successfully received up the interruption will be in the memory of the receiving unit.

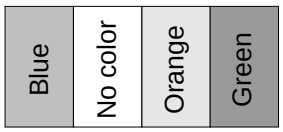
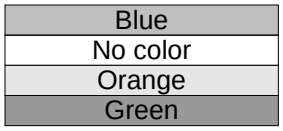
- An error occurs if the receiving unit memory becomes full during data communications. When this happens, press [AC] to clear the error and delete unneeded data from the receiving unit to make room for the new data, and then try again.

- To send picture (graph) memory data, the receiving unit need 1-kbyte of memory for use as a work area in addition to the data being received.

5. OPERATION CHECK

✻ Performing this operation check, the data stored in this calculator is deleted. If you want not to delete these data, save these data to another CFX-9970G.

STEP	OPERATION	DISPLAY	NOTE
1	Press [P] button on the back of the unit using any thin and pointed object.	✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻ ✻ RESET ✻ ✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻ RESET ALL MEMORIES? [F1] [F6] YES RESET ALL NO	Reset
2	Press [F1] button.	✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻ ✻ MEMORY CLEARED! ✻ ✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻ PRESS [MENU] KEY	
3	Press [SHIFT], then [AC/ON] button.	OFF (No display)	
4	Press [AC/ON] button while pressing [F6] and [ab/c] buttons at the same time.	<<<ZX936 TEST MODE>>> 4MbitROM ✻/✻✻ 8MbitROM ✻/✻✻ 1.Cnt 6.ROM 2.LCD 7.RAM 3.KEY 8.CYC 4.DET 9.3020 5.TRS 0.Rst	TEST mode menu
5	Press [1], then [EXE] button.	COLOR ◀O B G▶ ORANGE BLUE GREEN ◀– +▶ ▶ CONTRAST INIT IN•A	The contrast changes automatically. Min→Max→default
6	Press [EXIT] button.	<<<ZX936 TEST MODE>>> 4MbitROM ✻/✻✻ 8MbitROM ✻/✻✻ 1.Cnt 6.ROM 2.LCD 7.RAM 3.KEY 8.CYC 4.DET 9.3020 5.TRS 0.Rst	TEST mode menu
7	Press [2] button.	Frame is displayed	Check for display
8	Press [EXE] button.	No color, no display	Check for display
9	Press [EXE] button.	All orange dots are displayed	Check for display
10	Press [EXE] button.	All green dots are displayed	Check for display

STEP	OPERATION	DISPLAY	NOTE
11	Press [EXE] button.	All blue dots are displayed	Check for display
12	Press [EXE] button.	Checkers are displayed	Check for display
13	Press [EXE] button.	Reverse checkers are displayed	Check for display
14	Press [EXE] button.		Check four colors. If the colors do not appear accurately, perform the adjustment mentioned in page 5.
15	Press [EXE] button.		Check four colors
16	Press [EXE] button.	<<<ZX936 TEST MODE>>> 4MbitROM */** 8MbitROM */** 1.Cnt 6.ROM 2.LCD 7.RAM 3.KEY 8.CYC 4.DET 9.3020 5.TRS 0.Rst	TEST mode menu
17	Press [3] button.	Trace	Check for keys
18	Press [F1] [F2] [F3] ..... buttons.	Trace,Zoom, V-Window.....	Check for keys. Push the key sequentially indicated on the display.
19	Press ..... [EXE] buttons.	<<<ZX936 TEST MODE>>> 4MbitROM */** 8MbitROM */** 1.Cnt 6.ROM 2.LCD 7.RAM 3.KEY 8.CYC 4.DET 9.3020 5.TRS 0.Rst	TEST mode menu
20	Press [6] button.	3017 4MbitROM */** ↓ 3017 4MbitROM */** *** ROM OK*** CALC SUM= ****** READ SUN= ****** 3020 8MbitROM */** *** ROM OK*** CALC SUM= ****** READ SUN= ******	ROM check The display shown to the left appears about 6 seconds later.

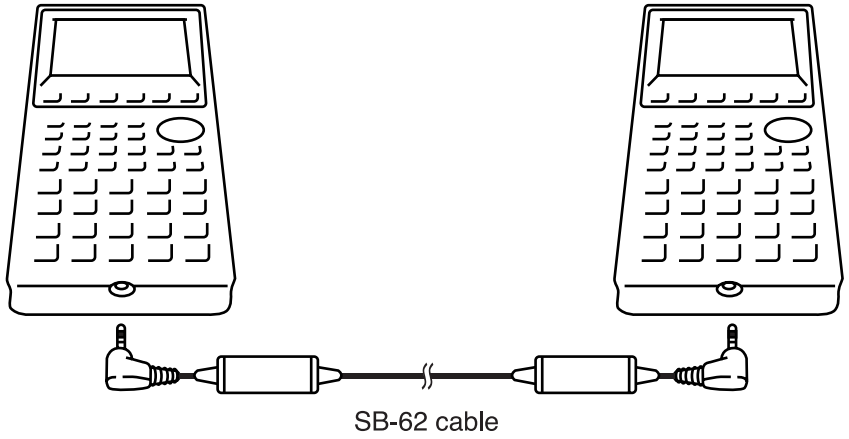
STEP	OPERATION	DISPLAY	NOTE
21	Press [EXE] button.	<<<ZX936 TEST MODE>>> 4MbitROM */** 8MbitROM */** 1.Cnt 6.ROM 2.LCD 7.RAM 3.KEY 8.CYC 4.DET 9.3020 5.TRS 0.Rst	TEST mode menu
22	Press [7] button.	RAMSIZE 128K byte ↓ RAMSIZE 128K byte RAM OK RAMaddress FFFF RAMwrite AA RAMread AA	RAM check The display shown to the left appears about 10 seconds later.
23	Press [EXE] button.	<<<ZX936 TEST MODE>>> 4MbitROM */** 8MbitROM */** 1.Cnt 6.ROM 2.LCD 7.RAM 3.KEY 8.CYC 4.DET 9.3020 5.TRS 0.Rst	TEST mode menu
24	Press [0] button.	******************** * RESET * ******************** RESET ALL MEMORIES ? [F1] [F6 YES RESET ALL N O	Reset
25	Press [F1] button.	******************** * * * * * MEMORY CLEARED ! * * * * * ******************** PRESS [MENU] KEY	
26	Press [MENU] button.	MAIN MENU.	
27	Press [SHIFT] , then [AC/ON] button.	OFF (No display)	END

6. TO SAVE THE DATA

CFX-9970G can transfer the customer's data to another CFX-9970G unit with memory protection only when replacing the LCD or the outer case.

To connect the CSF Unit to another CSF Unit

1. Make sure that the power of both units are switched off.
2. Remove the covers from the data communications jacks on the two CSF Units.
3. Connect the two units using the SB-62 cable.



STEP	A unit		B unit		NOTE
	OPERATION	OPERATION	OPERATION	OPERATION	
	Press AC/ON button while pressing F6 and ab/c button at the same time.	<<<ZX936 TEST MODE>>> 4MbitROM ✻/ ✻✻ 8MbitROM ✻/ ✻✻ 1.Cnt 6.RON 2.LCD 7.RAM 3.KEY 8.CYC 4.DET 9.3020 5.TRS 0.Rst	Press AC/ON button while pressing F6 and ab/c buttons at the same time.	<<<ZX936 TEST MODE>>> 4MbitROM ✻/ ✻✻ 8MbitROM ✻/ ✻✻ 1.Cnt 6.RON 2.LCD 7.RAM 3.KEY 8.CYC 4.DET 9.3020 5.TRS 0.Rst	TEST mode menu
1	Press 5 button.	TRANSMIT Check 1.COM Check 2.VCCI Spec Test	Press 5 button.	TRANSMIT Check 1.COM Check 2.VCCI Spec Test	
2	Press 1 button.	0.Self 1.Send 2.Receive	Press 1 button.	0.Self 1.Send 2.Receive	
3			Press 2 button.	WAITING ...	
4	Press 1 button.	SENDING ... ↓ COM END		RECEIVING ... ↓ COM OK	

STEP	A unit		B unit		NOTE
	OPERATION	OPERATION	OPERATION	OPERATION	
5	Press [EXE] button.	0.Self 1.Send 2.Receive	Press [EXE] button.	0.Self 1.Send 2.Receive	
6	Press [2] button.	WAITING ...			
7		RECEIVING ... ↓ COM OK	Press [1] button.	SENDING ... ↓ COM END	
8	Press [EXE] button.	0.Self 1.Send 2.Receive	Press [EXE] button.	0.Self 1.Send 2.Receive	
9	Press [AC/ON] button.	<<<ZX936 TEST MODE>>> 4MbitROM ✲/ ✲✲ 8MbitROM ✲/ ✲✲ 1.Cnt 6.RON 2.LCD 7.RAM 3.KEY 8.CYC 4.DET 9.3020 5.TRS 0.Rst	Press [AC/ON] button.	<<<ZX936 TEST MODE>>> 4MbitROM ✲/ ✲✲ 8MbitROM ✲/ ✲✲ 1.Cnt 6.RON 2.LCD 7.RAM 3.KEY 8.CYC 4.DET 9.3020 5.TRS 0.Rst	TEST mode menu
10	Take the steps as same as the end of 5.OPERATION CEHCK to end this check.		Take the steps as same as the end of 5.OPERATION CEHCK to end this check.		

7. TROUBLESHOOTING

SYMPTOM	CAUSE	SOLUTION
Intermittent display	Dirt or poor contact on battery	Clean or adjust pressure of contact
	Poor contact on power switch	Clean or replace power switch
	Poor connection on PC joiner	Resolder or replace
	Poor soldering on LSI, capacitor, or resistor	Resolder
No display at all	Weak battery	Replace battery
	Dirt or poor contact on battery	Clean or adjust pressure of contact
	Poor contact on power switch	Clean or replace power switch
	Poor connection on PC joiner	Resolder or replace
	Defective LSI, capacitor, or resistor	Replace
Erratic display	Poor contact between LCD and PCB	Replace the heat seal
	Poor soldering on LSI	Resolder or replace display PCB ass'y
Certain key does not function	Dirt on key contact	Clean or replace contact
	Heavy key motion	Clean or replace the key
	Poor soldering on LSI	Resolder
	Defective LSI, capacitor, or resistor	Replace
All keys do not function	Constant contact is made on a certain key	Separate the contact
	Defective LSI, capacitor, or resistor	Replace
Heavy key motion	Dirt or scratch on the key	Clean or replace the key

8. OPERATION PROBLEMS

If you keep having problems when you are trying to perform operations, try the following before assuming that there is something wrong with the calculator.

• Get the Calculator Back to its Original Mode Settings

1. In the Main Menu, select the **RUN** icon and press [EXE] .
2. Press [SHIFT] [SET UP] to display the set up screen.
3. Highlight "Angle" and press [F2] (Rad).
4. Highlight "Display" and press [F3] (Norm) to select the exponential display range (Norm 1 or Norm 2) that you want to use.
5. Now enter the correct mode and perform your calculation again, monitoring the results on the display.

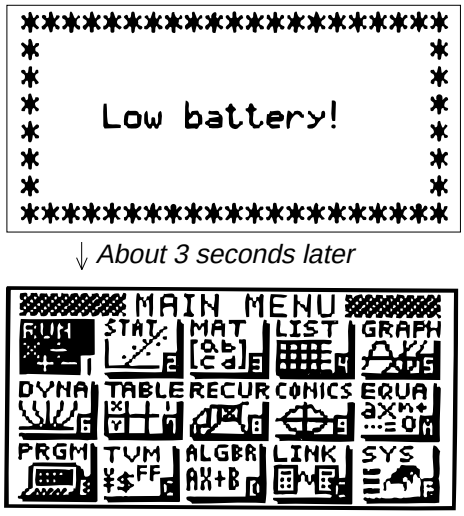
• In Case of Hang Up

- Should the unit hang up and stop responding to input from the keyboard, press the P button on the back of the calculator to reset the memory. Note, however, that this clears all the data in calculator memory.

• Low Battery Message

The low battery message apppears whenever you press [AC/ON] to turn power on or [MENU] to display the Main Menu while the main battery power is below a certain level.

[AC/ON] or [MENU]



If you continue using the calculator without replacing batteries, power will automatically turn off to protect memory contents. Once this happens, you will not be able to turn power back on, and there is the danger that memory contents will be corrupted or lost entirely.

- You will not be able to perform data communications operations once the low battery message appears.

9. ERROR MESSAGE

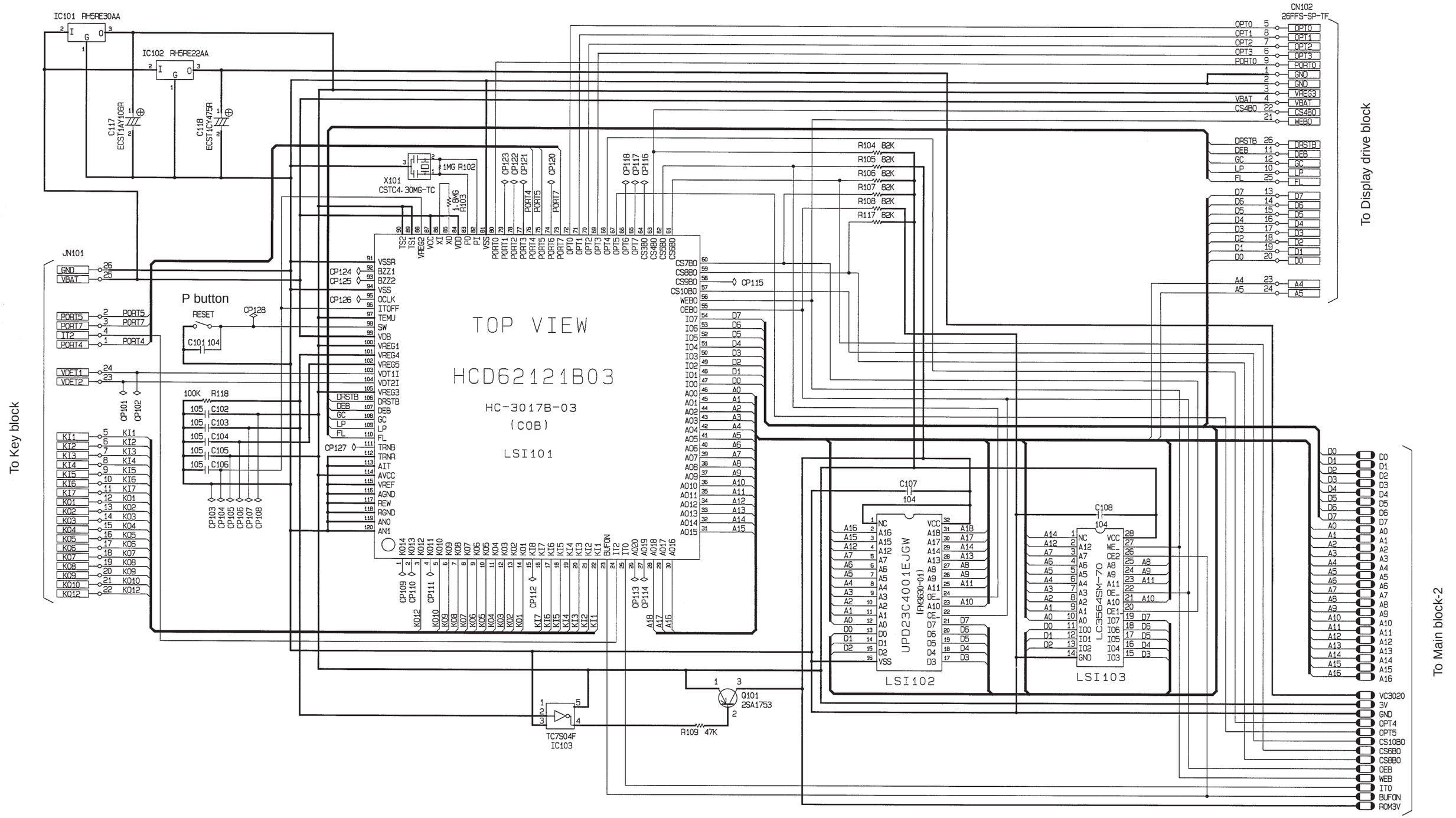
Message	Meaning	Countermeasure
Syn ERROR	① Calculation formula contains an error. ② Formula in a program contains an error.	① Use ◀ or ▶ to display the point where the error was generated and correct it. ② Use ◀ or ▶ to display the point where the error was generated and then correct the program.
Ma ERROR	① Calculation result exceeds calculation range. ② Calculation is outside the input range of a function. ③ Illogical operation (division by zero, etc.) ④ Poor precision in Σ calculation results. ⑤ Poor precision in differential calculation results. ⑥ Poor precision in integration calculation results. ⑦ Cannot find results of equation calculations. ⑧ Attempt to use **approx** with an expression that generates an error unique to the ALGBR Mode.	①②③④ Check the input numeric value and correct it. When using memories, check that the numeric values stored in memories are correct. ⑤ Try using a smaller value for Δx (x increment/decrement). ⑥ Try changing the tolerance "tol" when using Gauss-Kronrod Rule or the number of divisions "n" when using Simpson's Rule to another value. ⑦ Check the coefficients of the equation. ⑧ Change the input expression.
Go ERROR	① No corresponding Lbl n for Goto n. ② No program stored in program area Prog "file name".	① Correctly input a Lbl n to correspond to the Goto n, or delete the Goto n if not required. ② Store a program in program area Prog "file name", or delete the Prog "file name" if not required.
Ne ERROR	• Nesting of subroutines by Prog "file name" exceeds 10 levels.	• Ensure that Prog "file name" is not used to return from subroutines to main routine. If used, delete any unnecessary Prog "file name". • Trace the subroutine jump destinations and ensure that no jumps are made back to the original program area. Ensure that returns are made correctly.

Message	Meaning	Countermeasure
Stk ERROR	• Execution of calculations that exceed the capacity of the stack for numeric values or stack for commands.	•Simplify the formulas to keep stacks withi 10 levels for the numeric values and 26 levels for the commands. • Divide the formula into two or more parts.
Mem ERROR	• Not enough memory to input a function into function memory. • Not enough memory to create a matrix using the specified dimension. • Not enough memory to hold matrix calculation result. • Not enough memory to store data in list function. • Not enough memory to input coefficient for equation. • Not enough memory to hold equation calculation result. • Not enough memory to hold function input in the Graph Mode for graph drawing. • Not enough memory to hold function input in the DYNA Mode for graph drawing. • Not enough memory to hold function or recursion input.	• Keep the number of variables you use for the operation within the number of variables currently available. • Simplify the data you are trying to store to keep it within the available memory capacity. • Delete no longer needed data to make room for the new data.
Arg ERROR	• Incorrect argument specification for a command that requires an argument.	• Correct the argument. • Lbl n, Goto n: n = integer from 0 through 9.
Dim ERROR	• Illegal dimension or list used during matrix calculations.	• Check matrix or list dimension.
Com ERROR	• Problem with cable connection or parameter setting during program data communications.	• Check cable connection.
TRANSMIT ERROR !	• Problem with cable connection or parameter setting during data communications.	• Check cable connection.
RECEIVE ERROR !	• Problem with cable connection or parameter setting during data communications.	• Check cable connection.
MEMORY FULL !	• Memory of receiving unit became full during program data communications.	• Delete some data stored in the receiving unit and try again.

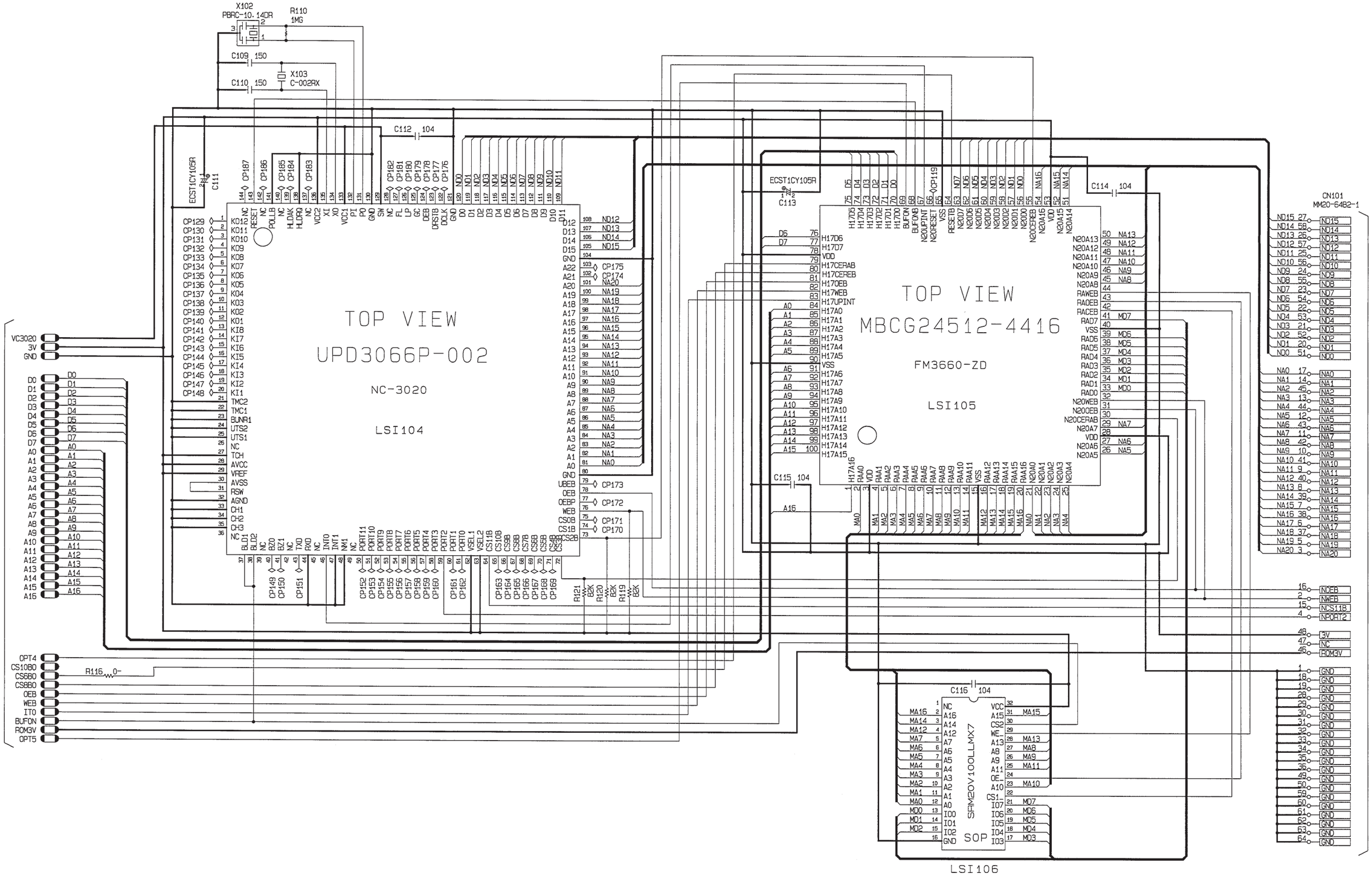
Message	Meaning	Countermeasure
Undefined	• No solution exists for the operation being performed in the ALGBR Mode.	• Change the input expression.
Overflow ERROR	• The resulf of the operation being performed in the AKGBR Mode exceds the range of the calculator.	• Change the input expression.
Domain ERROR	• An input value in the ALGBR Mode is outside the domain of the operation being performed.	• Change the input expression.
Non-Real ERROR	• In the ALGBR Mode, only real numbers have been input and the result is complex number while the set up screen's Answer Type item is specified as "**Real**".	1 Change the setting of Answer type to "**Cplx**". 2 Change the input expression.
No Solution ERROR	• No solution can be obtained in the ALGBR Mode using the Solve function.	1 Change the setting of Answer type to "**Cplx**". 2 Change the input expression.

10. SCHEMATIC DIAGRAMS

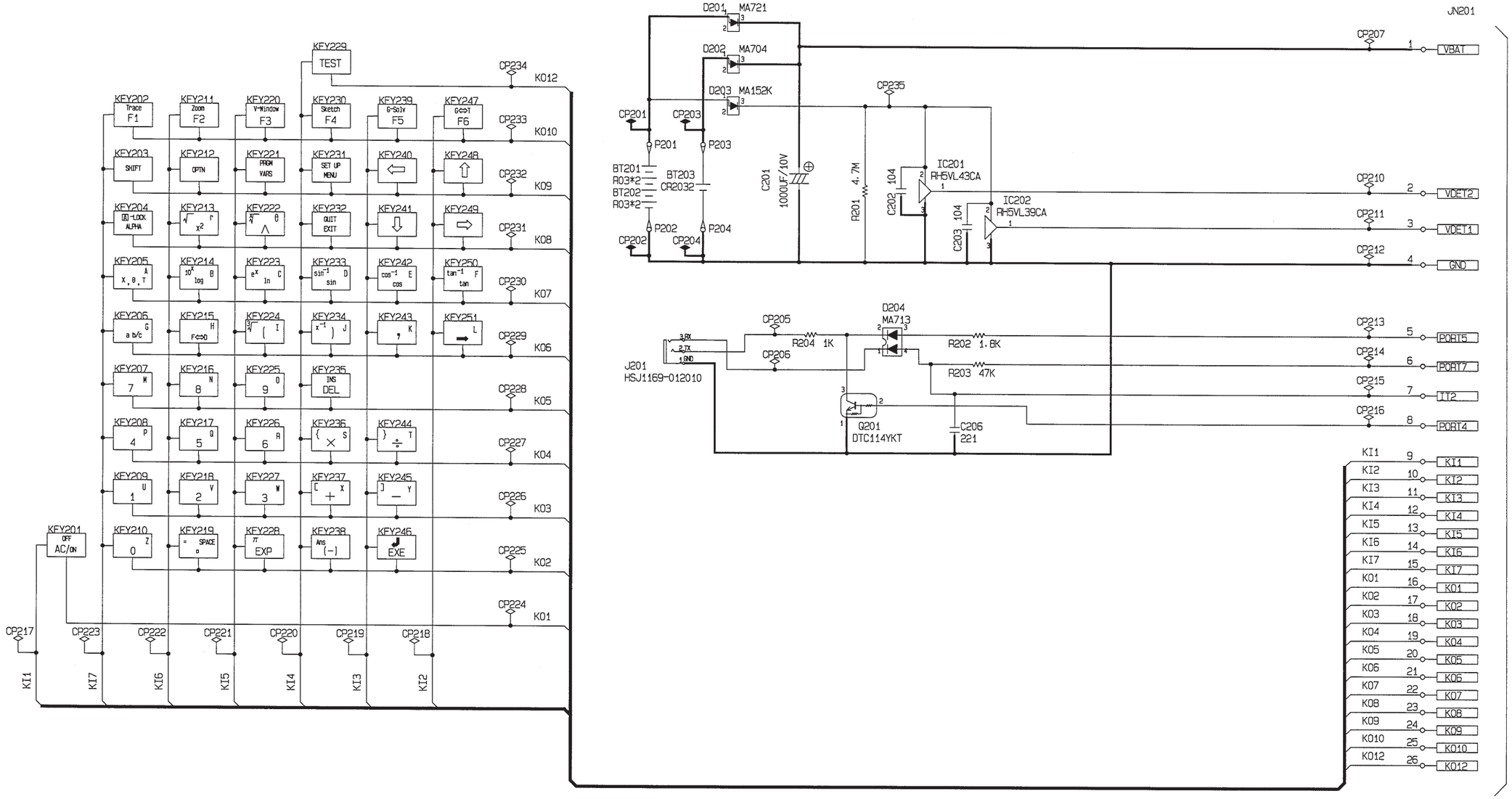
Main block-1



Main block-2


To Main block-1
To Memory block
TOP VIEW
UPD3066P-002
NC-3020
LSI104
TOP VIEW
MBCG24512-4416
FM3660-ZD
LSI105
LSI106
SRM2OV100LLMX7
SOP
X102
PBRC-10.14DR
R110
1MG
C109 150
C110 150
X103
C-002RX
C112 104
C111
ECST1CY105R
C113
C114 104
C115 104
CN101
MM20-64B2-1
R116 0-
R121 82K
R120 82K
R119 82K

Key block


KEY229
TEST
CP234
K012
KEY202
Trace
F1
KEY211
Zoom
F2
KEY220
V-Window
F3
KEY230
Sketch
F4
KEY239
G-Solv
F5
KEY247
G⇔T
F6
CP233
K010
KEY203
SHIFT
KEY212
OPTN
KEY221
PRGM
VARS
KEY231
SET UP
MENU
KEY240
KEY248
CP232
K09
KEY204
ALPHA-LOCK
ALPHA
KEY213
KEY222
KEY232
QUIT
EXIT
KEY241
KEY249
CP231
K08
KEY205
X,θ,T
KEY214
log
KEY223
ln
KEY233
sin
KEY242
cos
KEY250
tan
CP230
K07
KEY206
a b/c
KEY215
F⇔D
KEY224
KEY234
KEY243
KEY251
CP229
K06
KEY207
7
KEY216
8
KEY225
9
KEY235
INS
DEL
CP228
K05
KEY208
4
KEY217
5
KEY226
6
KEY236
KEY244
CP227
K04
KEY209
1
KEY218
2
KEY227
3
KEY237
KEY245
CP226
K03
KEY201
OFF
AC/ON
KEY210
0
KEY219
SPACE
KEY228
EXP
KEY238
Ans
(-)
KEY246
EXE
CP225
K02
CP224
K01
CP217
CP223
CP222
CP221
CP220
CP219
CP218
KI1
KI7
KI6
KI5
KI4
KI3
KI2
D201 MA721
D202 MA704
D203 MA152K
CP235
CP201
CP203
P201
P203
BT201
R03*2
BT202
R03*2
BT203
CR2032
P202
P204
CP202
CP204
C201
1000UF/10V
R201 4.7M
C202 104
IC201
RH5VL43CA
C203 104
IC202
RH5VL39CA
JN201
CP207
1
VBAT
CP210
2
VDET2
CP211
3
VDET1
CP212
4
GND
D204
MA713
CP205
CP206
R204 1K
R202 1.8K
R203 47K
J201
HSJ1169-012010
3.RX
2.TX
1.GND
G201
DTC114YKT
C206
221
CP213
5
PORT5
CP214
6
PORT7
CP215
7
IT2
CP216
8
PORT4
KI1
KI2
KI3
KI4
KI5
KI6
KI7
KO1
KO2
KO3
KO4
KO5
KO6
KO7
KO8
KO9
KO10
KO12
9
10
11
12
13
14
15
16
17
18
19
20
21
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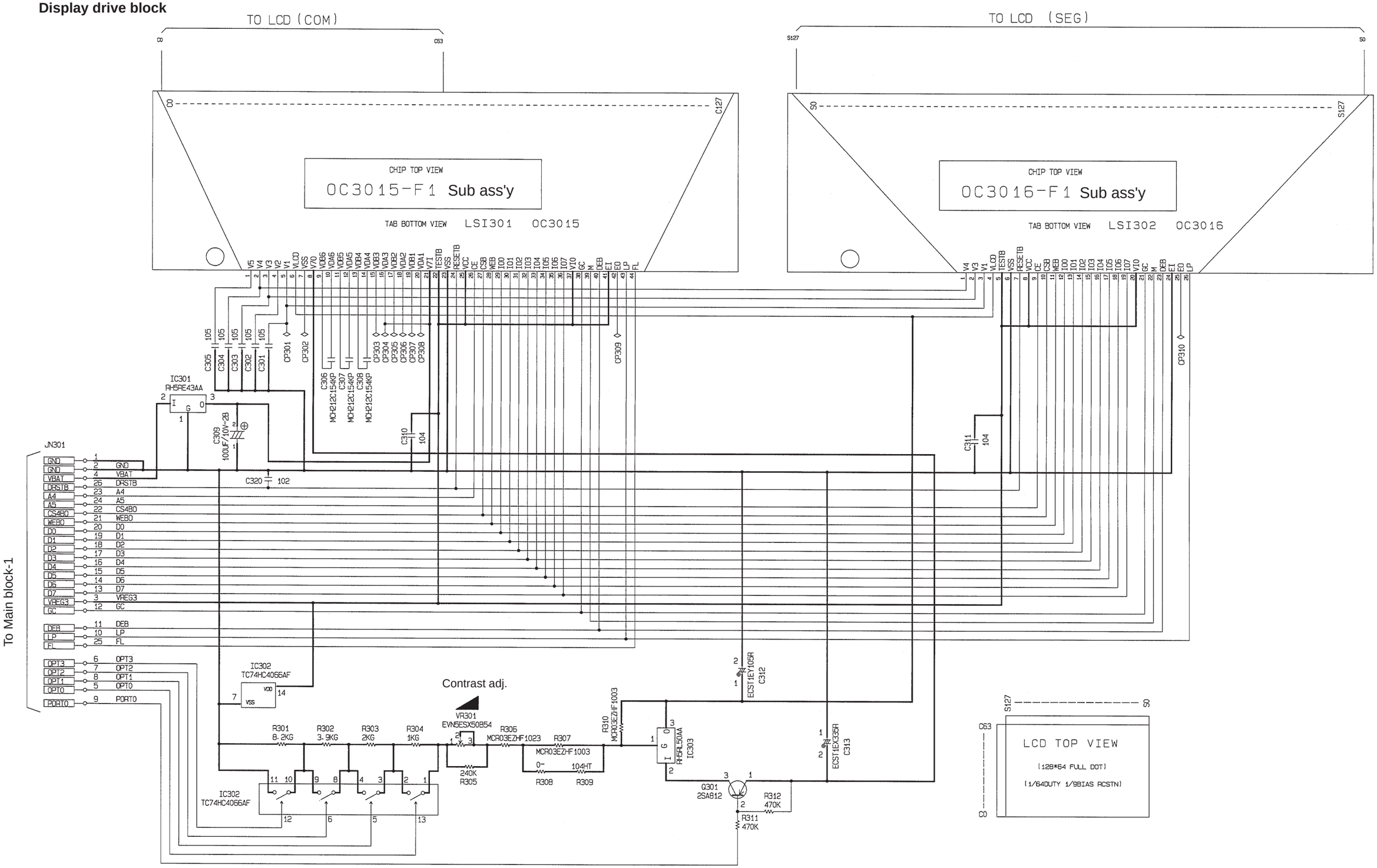
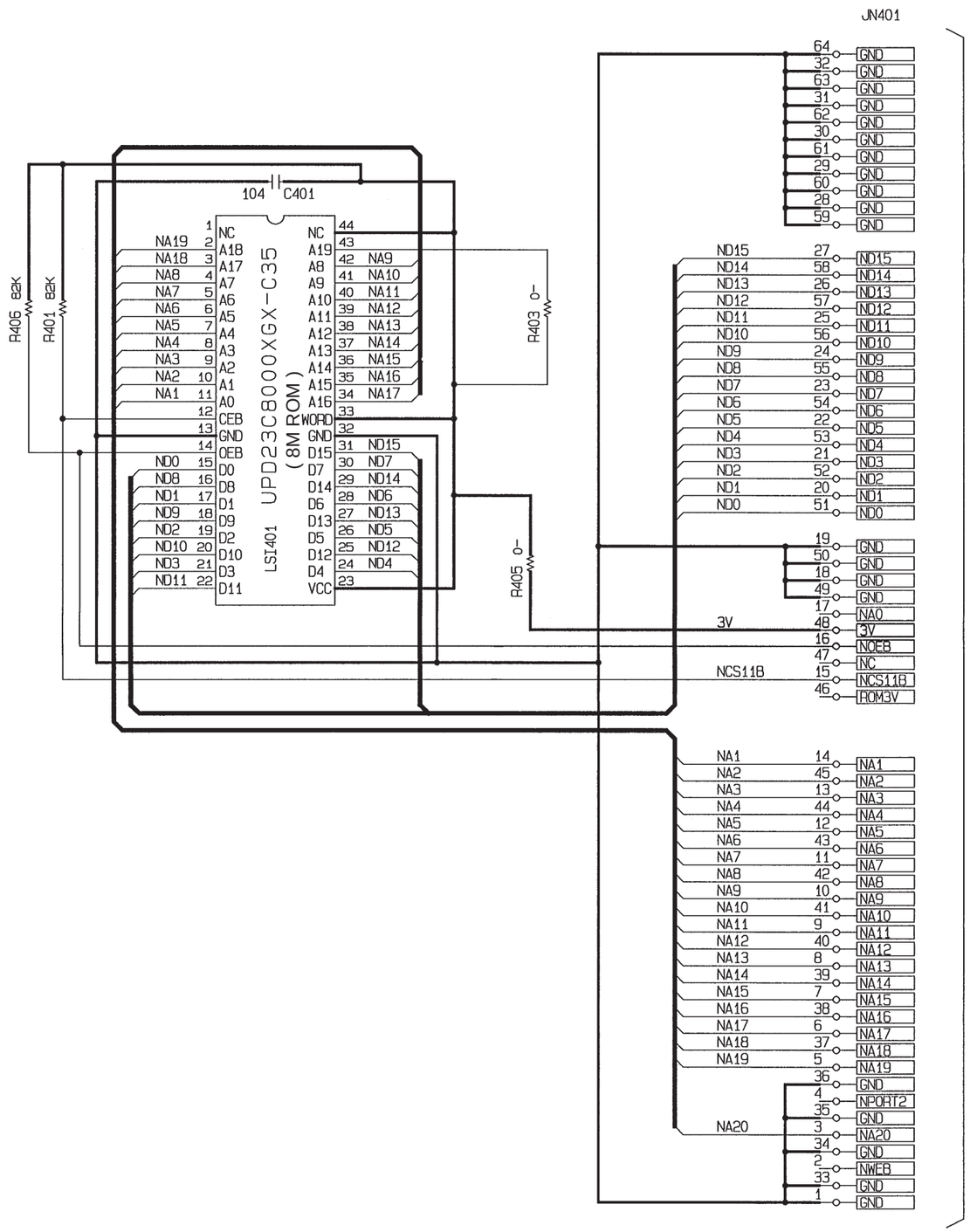
23
24
25
26
To Main block-1

Display drive block



Memory block



11. PARTS LIST

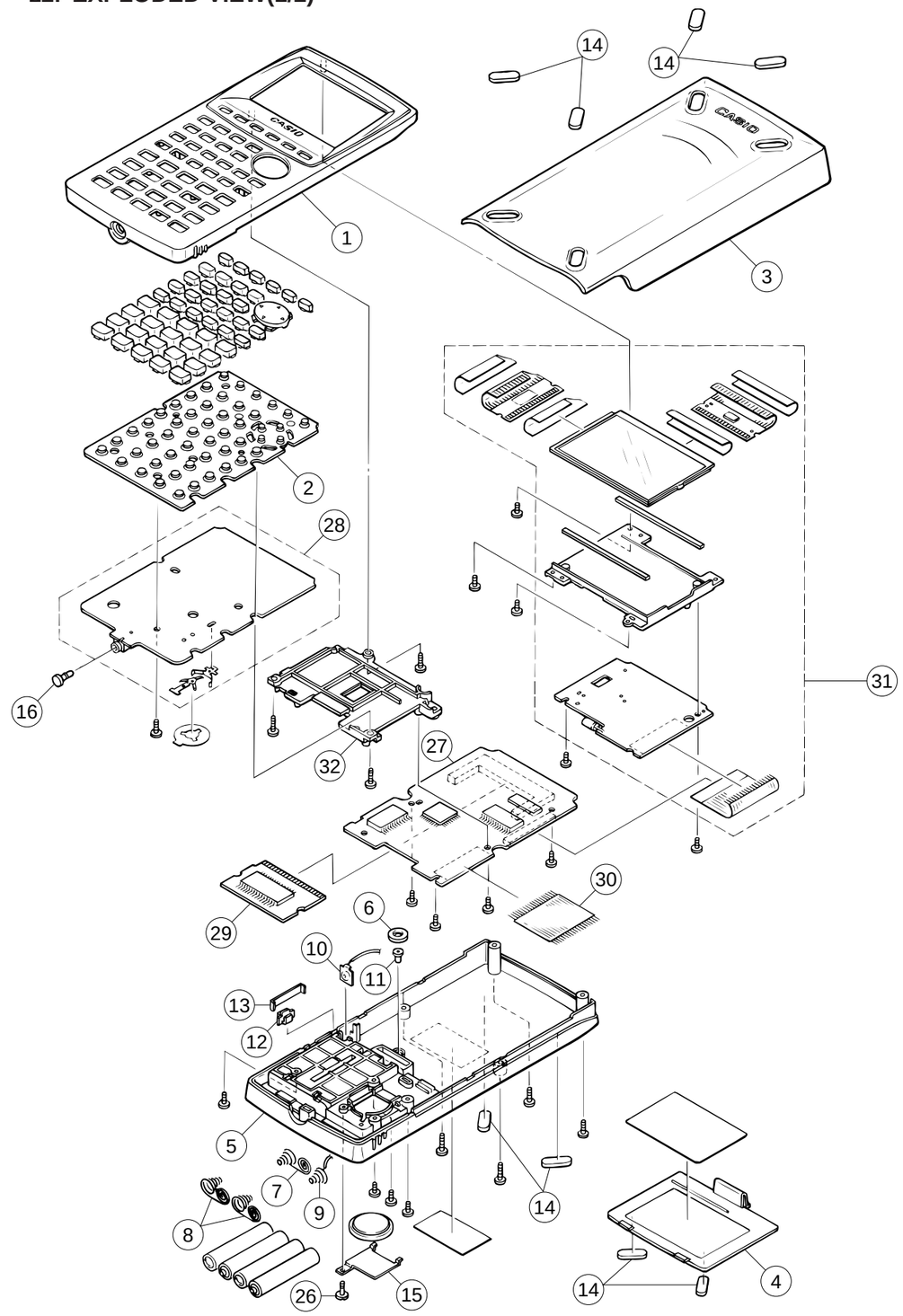
N	Item	Code No.	Parts Name	Specification	Q	R
	COMPONENTS					
N	1	6421 0990	CASE/UPPER	A140713-2	1	X
N	2	6420 7010	RUBBER/CONTACT	A241013-1	1	C
N	3	6421 1000	HARD COVER	A140715-2	1	X
N	4	6421 1010	COVER/BATTERY	A241009-2	1	C
N	5	6421 1110	CASE/LOWER	A140714-2	1	X
	6	6419 9840	RUBBER/CONTACT	A341594-1	1	C
	7	6398 8740	SPRING/BATTERY	A412218-1	1	C
	8	6386 7470	SPRING/BATTERY	A410113-1	2	C
	9	6386 7450	SPRING/BATTERY	A410112-1	1	C
	10	6386 7430	SPRING/BATTERY	A310154-1	1	C
N	11	6420 3660	BUTTON	A341610-1	1	C
N	12	6421 3090	SPRING	A341016-4	1	C
	13	6417 3520	SPRING	A441675-1	1	C
N	14	6420 7040	RUBBER/FOOT	A442718-1	8	X
	15	6416 9500	HOLDER/BATTERY	A441594-1	1	C
	16	6390 0432	CAP	A310765B-1	1	C
N	17	6421 1020	BUTTON	A211169-5	1	C
N	18	6421 1030	BUTTON	A211172-4	1	C
N	19	6421 1040	BUTTON	A312937-3	1	C
N	20	6421 1050	BUTTON	A211316-12	1	C
N	21	6421 1060	BUTTON	A313257-12	1	C
N	22	6421 1070	BUTTON	A313257-13	1	C
N	23	6421 1080	BUTTON	A313257-14	1	C
N	24	6421 1090	BUTTON	A312914-4	1	C
N	25	6421 1100	BUTTON	A341741-2	1	C
	26	6402 2480	DECORATIVE SCREW A-L163	A412682-1	1	C
N	27	6420 6910	PCB ASSY	A241051C*1	1	B
N	28	6420 6920	PCB ASSY	A241052B*1	1	B
N	29	6420 6930	PCB ASSY	A341804A*1	1	B
N	30	3719 5369	CABLE/JOINT	A442842-1	1	C
N	31	6420 6900	LCD ASSY	A241053B*1	1	B
N	32	6420 7230	FRAME/INNER CASE	A241008-1	1	X

Parts prices will be informed separately by Parts Price List.

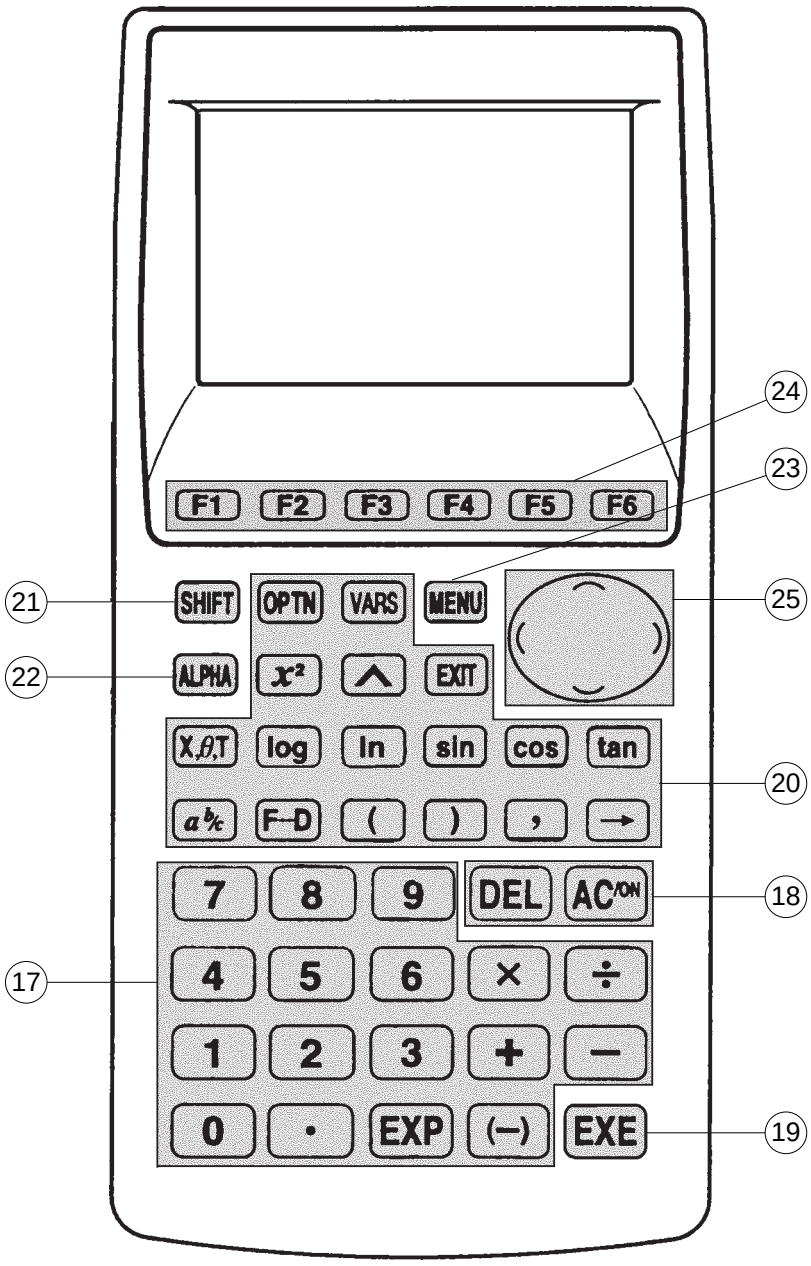
Notes: N – New parts
Q – Quantity used per unit
R – Rank

R – A : Essential
B : Stock recommended
C : Others
X : No stock recommended

12. EXPLODED VIEW(1/2)



12. EXPLODED VIEW(2/2)



CASIO COMPUTER CO.,LTD.
Service Division

8-11-10, Nishi-Shinjuku
Shinjuku-ku, Tokyo 160, Japan
Telephone: 03-3347-4926

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